Comments and Communications

Radio Noise of Ionospheric Origin

Numerous investigators (Dellinger, J. H. *J. appl. Phys.*, 1937, **8**, 736; Heightman, D. W. *Wireless World*, 1938, 356; Stetson, Harlan T. *Science*, 1948, **108**, 354) have reported observation of a special type of radio noise, frequently associated with ionospheric disturbances. In most of these cases no source of the noise was indicated, although a few investigators suggested that it originated in the ionosphere (Arakawa, D. *Rep. rad. Res. Japan*, 1936, **6**, 31; Nakaganic, M. and Miya, K. *Electrotech. J. Japan*, 1939, 216; Watts, J. M. *Terr. Mag. atm. Elec.*, 1946, **51**, 122). For the past two years, measurements of cosmic noise have been carried out at the Central Radio Propagation Laboratory at frequencies of 25, 50, 75, and 110 megacycles. The antennas for these measurements consist of half-wave dipoles one-quarter wavelength aboveground. These have broad patterns so that radiation from nearly the entire sky is received. On numerous occasions, large amounts of noise were observed for sustained periods of several hours, which exceeded the recording limits of the instruments. Because of the broad patterns of the antennas, it seemed unlikely that this noise could originate in the sun, and an effort was made to determine whether the noise was coming from the entire sky or from the sun alone.

An opportunity to check this effect was afforded on November 23, 1949, when the recorders went to the scale limits. A solar radiometer was available at the time, adjusted to a frequency of 50 megacycles. It consists of a 25-foot Wurzburg type parabola excited with a folded-dipole antenna and reflector elements each approximately 9 feet in length. During the period of high noise level, the solar radiometer was directed at different parts of the sky, with the result that no appreciable decrease in the intensity of the radiation was observed. The radio noise field intensity was approximately sixfold that normally received from a quiet sun. Only when the antenna was directed toward the ground did the radiation fall off appreciably. A solar radiometer operated at 480 megacycles and pointed directly at the sun showed no unusual disturbances. Although the pattern of the Wurzburg antenna is very broad, this seems to be sufficient evidence that the radiations observed were coming from the entire sky and not from the sun. Presumably, this radio noise was of terrestrial origin, generated in the outer atmosphere of the earth.

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Errata

In our recent article ("Production of Mesons by X-Rays," by Edwin M. McMillan, Jack M. Peterson, and R. Stephen White," *Science*, December 2), the second sentence in the last paragraph on page 581 contains a typographical error. When a negative π-meson is made by a photon striking a neutron, the products are π^- and p^+, not π^- and π^+. Also, near the center of page 580, in the third paragraph "π = mesons" was incorrectly printed for "π-mesons."

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Scientists' Responsibility for Preventing War

The article "Scientists, Scientific Societies, and the Armed Forces," by Herman S. Wigodsky, in the August 5 issue of *Science* is clearly reasoned; it definitely needed to be written. Scientists ought to be grateful to Dr. Wigodsky for having opened this question.

In two respects, however, I believe the article is, shall I say, too brief. That is a soft way of saying something that could be said with hardness, but would probably be misunderstood. Of the two, the minor one is that he says: "A mechanism can be established whereby scientific societies and academic institutions may assist the armed forces in obtaining necessary scientific personnel of sufficiently high caliber to meet the needs." This sounds very much like assigning (drafting) people. Possibly it only means publicity that would encourage voluntary enlistment.

My other point is a major one. Dr. Wigodsky refers almost casually to a coming conflict, and to the obvious great importance of scientists when that "national emergency" comes. But what about encouraging academic institutions, scientific societies, and individual scientists to take up the job of preventing the war? In that service is where true patriotism and civic duty lie. There is the Number One job; war tools are necessary, probably, but second.

Of course one could argue that by turning our great scientific ability to the help of the armed forces we might make such a big noise that temporarily we could provide America with a peace-by-force-and-bluster. There is something to be said for that. But should not Dr. Wigodsky, or someone equally as eloquent, write an article for *Science* on the responsibility of scientists and scientific societies to work with triple effort on the job of construction rather than destruction, on the problem of survival rather than questionable domination, on the job of preventing the "national emergency" to which he refers?

There are a few people of my acquaintance (very few, but possibly many more of Dr. Wigodsky's) who believe we could have a jolly good war, with our scientists being exceedingly ingenious and murderous, and still save civilization for the further advance of science and human welfare. But most of us who think hard about it, and who look at the continuing tragedy of the last conflict, have grave doubts about the outcome of World War III.

I still believe that a good job has been done in opening this question. I hope the scientific societies may get more